

Application Serial No.: 10/030,990
Amendment dated July 19, 2004
Reply to Office Action dated March 18, 2004

REMARKS

Favorable reconsideration of this application as presently amended and in light of the following discussion is respectfully requested.

Claims 1-15 are presently active in this case, Claims 1-12 having been amended and Claims 13-15 having been added by way of the present Amendment.

The specification and claims have been amended in order to correct minor informalities. Care has been taken such that no new matter has been entered.

Claims 2-12 have been amended to change the term "Heater" to the expression "Infrared heater," in order to correspond to Claim 1.

Modifications have been made to the specification in order to correct clerical errors. In particular, on page 2 the measuring units of the wavelength of medium and short waves infrared radiations were erroneously "m" instead of " μm ". Applicants respectfully submit that a person of ordinary skill in the art would have recognized such a clerical error since a radiation having a wavelength comprised between 1 and 6 meter(s) is outside the range of infrared radiation.

Other modifications have also been made so as to correct errors that occurred during the translation from French to English of corresponding International Application WO 01/06814. The modifications have been made in order to clarify the specification using the most appropriate corresponding terms and expressions. In particular, in the whole specification the expression "middle type infrared" has been replaced with "medium wavelength range." On page 1, the expressions "drying layers," "punched ceramic plates," and "cross-linked" have been replaced with "coating slips," "perforated ceramic tiles," and

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"reticulated," respectively. On page 2, the expressions "spectral absorption properties" and "radiation yield" have been replaced with "spectral optical properties" and "radiant efficiency." On page 3, the term "pervious" has been replaced with "transparent." On page 5, the expressions "mechanical behavior," "thermal dilatation," and "material resistance" have been replaced with "mechanical weaknesses," "thermal expansion," and "material electrical resistivity," respectively. On page 4, the term "cover" has been replaced with "sheath," and the expression "an infrared pervious material" has been replaced with "a material transparent to infrared." On page 9, the expression "gas radiation means" has been replaced with "radiant gas burners." On page 10, lines 1 and 3, the term "IRHD" meaning "Infrarouge Haute Densité" in French has been replaced by the corresponding English term "HDIR" (High Density InfraRed). Finally, other minor stylistic modifications have been made to the specification.

In the outstanding Official Action, Claims 1-12 were rejected under 35 U.S.C. §103(a) as being unpatentable over Wild-Barfield (BE 497 198) in view of Dickens et al. (US 5,528,020) or Dickens et al. (US 5,227,597). For the reasons discussed below, the Applicants respectfully request the withdrawal of the obviousness rejections.

The basic requirements for establishing a *prima facie* case of obviousness as set forth in MPEP 2143 include (1) there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings, (2) there must be a reasonable expectation of success, and (3) the reference (or references when combined) must teach or suggest all of the claim limitations. The Applicants submit that a *prima facie* case of

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obviousness cannot be established in the present case because the references, either taken singularly or in combination, do not teach or suggest all of the claim limitations.

The Applicants would like first to point out that their invention as claimed in Claim 1 hereby submitted is related to "Infrared heater comprising a surface consisting of a material responding to induction and capable of withstanding elevated temperatures, at least one layer of insulating material of very low heat conductivity placed against said surface, an inductor adjacent said layers of insulating material and separated from said surface by said layers, and a field concentrator adjacent said inductor, whereby said surface produces high power density infrared radiation when heated at said elevated temperatures by electromagnetic induction."

Claim 1 has been amended, as presented above, in order to better define Applicants' invention. Support for the modifications made to Claim 1 can be found on page 9, lines 19 to 21, and 27 of the application as originally filed.

Such an infrared heater thus provides an efficient and innovative way of producing an infrared radiation. In fact, one of the aim of the Applicants' invention is to produce an infrared radiation by heating a surface at elevated temperatures by electromagnetic induction.

The Official Action alleges that the Wild-Barfield reference refers to an infrared heat system. The Applicants respectfully disagree, since this document is completely silent about infrared radiation. In fact, the Wild-Barfield reference does not mention the term "infrared" (or "infrarouge" in French). The Applicants respectfully submit that the Wild-Barfield reference does not teach nor suggest the use of an infrared heater and that this document refers to a different technology than their invention.

The Official Action also alleges that the induction-responsive material of the Wild-

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Barfield reference is "capable of withstanding high temperatures (page 2, lines 48 and 49)".

The Applicants respectfully disagree, since, at lines 48 and 49 of page 2, there is no such mention of high temperatures. Moreover, the Applicants submit that the Wild-Barfield reference is silent about high or elevated temperatures ("hautes températures" or "températures élevées" in French). Some detailed explanations are given below with respect to the range of temperatures used by the Wild-Barfield reference.

The Wild-Barfield reference refers to an improvement of a well-know technique of induction heating of a receptacle with a solenoid. The purpose of such an invention was to improve the power factor and the efficiency of a classical electromagnetic heating device. The Wild-Barfield reference teaches that a way to improve the power factor and efficiency is to insert a sheath ("coquille", "gaine", or "enveloppe" in the original French text) made of a different material over or close to the surface of the steel receptacle in order to change the reactance of the equivalent circuit. This has to be done in the context of a classical problem associated with the use of low frequency induction systems.

Thus, the temperature of the container ("récipient" in French), as indicated on page 3, line 55 of the Wild-Barfield reference is few hundred degrees centigrade (370 °C). The Applicants respectfully submit that a person of ordinary skill in the present art would clearly understand that such a temperature cannot be considered as a temperature sufficiently elevated so as to produce high power density infrared radiation.

As indicated in the Official Action, the Dickens '020 reference and the Dickens '597 reference both relate to induction heaters including an induction heating coil and a flux concentrator. However, these two documents are silent about infrared heaters. As indicated

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above for the Wild-Barfield document, these two documents do not contain the term "infrared." Thus, the Dickens' documents clearly do not teach nor suggest the Applicants' infrared heater, as recited in Claim 1, which is useful for producing high power density infrared radiation by heating a surface at elevated temperatures by electromagnetic induction.

In view of the above, independent Claim 1 as currently amended clearly defines an invention which is patentable over Wild-Barfield (BE 497 198) in view of Dickens et al (US 5,528,020) or Dickens et al (US 5,227,597). Accordingly, withdrawal of the rejection under 35 U.S.C. §103(a) of Claim 1 is respectfully requested. Further, at least in view of their dependence on Claim 1, Claims 2 to 12 are also believed to be patentable over Wild-Barfield (BE 497 198) in view of Dickens et al (US 5,528,020) or Dickens et al (US 5,227,597). Therefore, withdrawal of the rejection of Claims 2 to 12 under 35 U.S.C. §103 (a) is similarly requested.

Newly added Claims 13-15 are considered allowable as they recite features of the invention that are neither disclosed nor suggested by the references of record. These claims have been inserted in order to better define Applicants' invention. Support for new claim 13 can be found on page 2, lines 13 to 15 and on page 9, lines 21 to 23. Support for new claim 14 can be found on page 5, lines 25 to 28. Support for new claim 15 can be found on page 6, lines 14 to 16.

It is submitted, therefore, that the claims are in condition for allowance. Reconsideration of the rejections is respectfully requested. Allowance of Claims 1-15 at an early date is solicited.

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In the event that there are any questions concerning this amendment or the application in general, the Examiner is respectfully urged to telephone the undersigned so that prosecution of this application may be expedited.

Respectfully Submitted,

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